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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/801,405	03/08/2001	Ichiro Kasai	15162/03340	2892

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EXAMINER

AMARI, ALESSANDRO V

ART UNIT PAPER NUMBER

2872

DATE MAILED: 08/14/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/801,405

Applicant(s)

KASAI ET AL.

Examiner

Alessandro V. Amari

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 16, 26 and 28-31 is/are rejected.
- 7) ☒ Claim(s) 14, 15, 17-25 and 27 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 March 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Specification

1. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: The original disclosure fails to describe or illustrate the optical element comprising a two hologram surface formed of reflection type holograms as recited in claim 31.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the optical element of claim 31 comprising a two hologram surface formed of reflection type holograms must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claim 29 is objected to because of the following informalities:

Regarding claim 29, line 2 the phrase "the third reflecting surface" lacks antecedent basis. Appropriate correction is required.

Claim R jections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

5. Claims 1, 4-6, 9-12 and 28-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Togino U.S. Patent 5,790,311.

In regard to claim 1, Togino discloses (see Figures 1-3) an information display device comprising an image display member (6) which displays images; and a prism (7) having at least two reflecting surfaces (3, 4) arranged in facing each other, and a hologram surface (5) formed of a reflection-type hologram as described in column 10, lines 61-63, and at least one of the two reflecting surfaces arranged in facing each other is a light-beam-selective surface which selectively transmits or reflects light as shown in Figures 1-3, wherein an image light beam that corresponds to image information and that exits from the image display member is reflected between the two reflecting surfaces arranged in facing each other, and is diffractively reflected on the hologram surface, and then, after being transmitted through the light-beam-selective surface, is

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directed to an observer's pupil (1) as shown in Figures 1-3 and as described in column 7, lines 1-18.

Regarding claim 4, Togino discloses that the hologram has optical power for projecting an image on an observer's pupil, while enlarging it as described in column 2, lines 52-55 and column 4, lines 50-56.

Regarding claim 5, Togino discloses that the hologram has a diffractive reflection angle wider than a regular reflection angle observed on the hologram surface as described in column 5, lines 16-48.

Regarding claim 6, Togino discloses that the reflecting surfaces arranged in facing each other have an inclination opening toward the incident side of a prism of the image light beam as shown in Figures 1-3.

Regarding claim 9, Togino discloses that the reflecting surfaces arranged in facing each other are substantially parallel to each other as shown in Figures 1-3.

Regarding claim 10, Togino discloses that the reflection occurring between the reflecting surfaces arranged in facing each other is total reflection as described in column 4, lines 57-61 and column 7, lines 8-14.

Regarding claim 11, Togino discloses that the hologram surface is plane as shown in Figures 1-3.

Regarding claim 12, Togino discloses that at least one of the two reflecting surfaces arranged in facing each other is a curved surface as described in column 2, lines 3-9.

In regard to claim 28, Togino discloses (see Figures 1-3) an optical element comprising two reflecting surfaces (3, 4) arranged in facing each other, and at least one of the two reflecting surfaces is a light-beam-selective surface that selectively transmits or reflects light as shown in Figures 1-3; and a hologram surface (5) formed of a reflection-type hologram as described in column 10, lines 61-63, wherein light entering the optical element is reflected on the two reflecting surfaces, and after being reflected on the hologram surface is transmitted through the light-beam selective surface and then exits therefrom as shown in Figures 1-3.

Regarding claim 29, Togino discloses that the third reflecting surface has positive optical power as described in column 2, lines 52-55, column 4, lines 50-56, column 7, lines 40-67, column 8, lines 1-67, column 9, lines 1-67 and column 10, lines 1-49.

Regarding claim 30, Togino discloses that the optical element is a prism as is shown in Figures 1-3.

6. Claims 13, 16, and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Kanai U.S. Patent 6,377,409.

In regard to claim 13, Kanai discloses (see Figures 3A, 3B) an information display device comprising: a first image display member (4aL) for displaying a first image; a first prism (10L) having at least two reflecting surfaces arranged in facing each other and another reflecting surface, and at least one of the two reflecting surfaces arranged in facing each other is a light-beam-selective surface which selectively transmits or reflects light as shown on left side of Figure 3A; a second image display member (4aR) for displaying a second image; and a second prism (10R) having the

same construction as the first prism, wherein an image light beam corresponding to the information of the first image exiting from the first image display member is reflected between the two reflecting surfaces of the first prism arranged in facing each other, and is reflected on another reflecting surface of the first prism, and then, after being transmitted through the light-beam-selective surface, is directed to an observer's pupil as shown in Figure 3A, on the other hand, an image, light beam corresponding to the information of the second image exiting from the second image display member is reflected between the two reflecting surfaces of the second prism arranged in facing each other, and is reflected on another reflecting surface, and then is, after being transmitted through the light beam-selective surface, directed to the same observer's pupil as the light beam of the first image as shown in Figure 3A.

Regarding claim 16, Kanai discloses that the first image display member and the second image display member are connected to each other as shown in Figure 3A.

Regarding claim 26, Kanai discloses that reflection occurring between the reflecting surfaces arranged in facing each other is total reflection as is shown in Figure 3A.

7. Claim 31 is rejected under 35 U.S.C. 102(e) as being anticipated by Taketomi et al. U.S. Patent 6,166,834.

In regard to claim 31, Taketomi et al. discloses (see Figure 36) an optical element comprising: two reflecting surfaces (2a, 2b) arranged in facing each other, and at least one of the two reflecting surfaces is a light-beam-selective surface that selectively transmits or reflects light as shown in Figure 36; and two hologram surface

(H1, H2) formed of a reflection-type holograms, wherein light entering the optical element is reflected between the two reflecting surfaces, and is reflected on the one of two hologram surfaces, and then is transmitted through the light-beam-selective surface, on the other hand, light which is different from the light to be reflected on the one of two hologram surfaces entering the optical element is reflected between the two reflecting surfaces, and is reflected on the other two hologram surfaces, after then, is transmitted through the light beam-selective surface as is shown in Figure 36 and as described in column 33, lines 17-67 and column 34, lines 1-62.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Togino U.S. Patent 5,790,311 in view of Ogata U.S. Patent 6,122,080.

Regarding claims 2 and 3, Togino teaches the invention as set forth above but does not teach that the hologram is a volume or phase hologram.

Ogata does teach that a hologram is a volume or phase hologram as described in column 4, lines 1-4.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the volume and phase hologram as taught by Ogata in the device of Togino in order to diffractively reflect the image light beam.

10. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Togino U.S. Patent 5,790,311 in view of Iizuka et al. U.S. Patent 6,049,429.

Regarding claims 7 and 8, Togino teaches the invention as set forth above but does not teach a deflection correction member for correcting deflection of external light that is transmitted through a prism and that the deflection correction member is attached to the prism, and has surfaces on the same surfaces of the reflecting surfaces arranged in facing each other.

Regarding claim 7, Iizuka et al. does teach (see Figure 4) a deflection correction member (11) for correcting deflection of external light that is transmitted through a prism as described in column 8, lines 20-23.

Regarding claim 8, Iizuka et al. does teach that the deflection correction member is attached to the prism as shown in Figure 4, and has surfaces on the same surfaces of the reflecting surfaces arranged in facing each other as shown in Figure 4.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the deflection correction member of Iizuka et al. in the device of Togino in order to correct for prism aberrations.

Allowable Subject Matter

11. Claims 14, 15, 17-25 and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. Claim 14 is allowable over the prior art for at least the reason that the prior art fails to teach or reasonably suggest, "the another reflecting surface has optical power

for projecting an image on an observer's pupil, while enlarging it" as set forth in the claimed combination.

Claim 15 is allowable over the prior art for at least the reason that the prior art fails to teach or reasonably suggest, "the another reflecting surface has an angle inclined to the incidental side of the prism of the image light beam" as set forth in the claimed combination.

Claim 17 is allowable over the prior art for at least the reason that the prior art fails to teach or reasonably suggest, "a deflection correction member for correcting deflection of external light that is transmitted through the prism" as set forth in the claimed combination.

Claim 18 is allowable over the prior art for at least the reason that the prior art fails to teach or reasonably suggest, "the another reflecting surface is a hologram surface formed of a reflection type hologram" as set forth in the claimed combination.

Claim 23 is allowable over the prior art for at least the reason that the prior art fails to teach or reasonably suggest, "the reflecting surfaces arranged in facing each other has an inclination opening toward the incident side of the prism of the image light beam" as set forth in the claimed combination.

Claim 24 is allowable over the prior art for at least the reason that the prior art fails to teach or reasonably suggest, "a deflection correction member for correcting deflection of external light that is transmitted through the prism" as set forth in the claimed combination.

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Claim 25 is allowable over the prior art for at least the reason that the prior art fails to teach or reasonably suggest, "the reflecting surfaces arranged in facing each other are substantially parallel to each other" as set forth in the claimed combination.

Claim 27 is allowable over the prior art for at least the reason that the prior art fails to teach or reasonably suggest, "at least one of the two reflecting surfaces arranged in facing each other is a curved surface" as set forth in the claimed combination.

The prior art of record, Togino, Kanai, Iizuka et al. and Ogata teach an information display device with image display members and one or two prisms having at least two reflecting surfaces and another reflecting surface which is a hologram wherein an image light beam that corresponds to image information and that exits from the image display members is reflected between the two reflecting surfaces arranged in facing each other, and is diffractively reflected on the hologram surface, and then, after being transmitted through the light-beam-selective surface, is directed to an observer's pupil. However, the combination does not teach that in the two prism arrangement another reflecting surface has optical power for projecting an image on an observer's pupil, while enlarging it or that the other reflecting surface has an angle inclined to the incidental side of the prism of the image light beam or that a deflection correction member for correcting deflection of external light that is transmitted through the prism or that the other reflecting surface is a hologram surface formed of a reflection type hologram. Nor does the combination teach that the reflecting surfaces arranged in facing each other has an inclination opening toward the incident side of the prism of the

image light beam nor that there is a deflection correction member for correcting deflection of external light that is transmitted through the prism nor that the reflecting surfaces arranged in facing each other are substantially parallel to each other nor that at least one of the two reflecting surfaces arranged in facing each other is a curved surface and there is no motivation or teaching to modify this difference as derived.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alessandro V. Amari whose telephone number is (703) 306-0533. The examiner can normally be reached on Monday-Friday 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on (703) 308-1687. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

ava *AV*
August 9, 2002



Cassandra Spyrou
Supervisory Patent Examiner
Technology Center 2800